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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/782,434	02/13/2001	Martin Franz	YOR9-2001-0011US1 (8728-4	9870

7590	06/09/2004	EXAMINER

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ART UNIT	PAPER NUMBER
2655	

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4

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	09/782,434	FRANZ ET AL.
	Examiner	Art Unit
	Jakieda R Jackson	2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _12 April 2004_.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1 and 3-24_ is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _1 and 3-24_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _13 February 2001_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   In response to the Office Action mailed January 8, 2004, applicant

submitted an Amendment filed on April 12, 2004, in which the applicant amended

claim 1 to include the limitations of claim 2 and canceled claim 2. Applicant has

requested reconsideration of the amended claim 1. Applicant also traverses

rejected claims 11 and 19.

Response to Arguments

2.   Applicant argues, regarding claim 2, that Gillick does not disclose "dividing

text data", instead Gillick discloses dividing the spoken utterance. Applicant also

argues, regarding claim 2, that Gillick does not anticipate "dividing text data for

training a plurality of sets of coefficients into partitions, depending on word counts

corresponding to each of the at least two language models".

Regarding claims 11 and 19, applicant argues that Gillick does not

disclose "each of the n-weights depend on n-gram history counts". Applicant

points out that the office action cites the value of R of Gillick as disclosing "each

of the n-weights depend on n-gram history counts," (column 16, lines 42-44), in

which the applicant disagrees. Although that particular section does not

specifically discloses that each of the n-weights depend on n-gram history

counts, Gillick does teach n-gram's being the number of occurrences of the given

n-gram (word frequency). Therefore, the applicant's arguments have been fully

considered but they are not persuasive.

Claim Objections

3.   **Claims 3, 4 and 7** are objected to because of the following informalities:

- Claims 3, 4 and 7 depend on canceled claim 2. Therefore, the examiner

  has interpreted those claims as depending on claim 1.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5.   **Claims 1, 3, 5-13 and 15-24** are rejected under 35 U.S.C. 102(e) as being

anticipated by Gillick et al. (6,167,377), hereinafter referenced as Gillick.

Regarding **claim 1, 12, 20 and 21**, Gillick discloses an Automatic Speech

Recognition (ASR) system (figure 1, element 160; column 1, lines 6-7) having at

least two language models (variety of language models; column 2, lines 1-5), a

method for combining language model scores (column 16, lines 8-11) generated

by at least two language models, said method comprising the steps of:

generating a list (figure 11, element 1125) of most likely words for a

current word in a word sequence uttered by a speaker (column 1, lines 33-42),

and acoustic scores corresponding to the most likely words (figure 9);

computing language model scores for each of the most likely words in the

list (column 18, lines 36-39), for each of the at least two language models;

respectively and dynamically determining a set of coefficients to be used

to combine the language model scores of each of the most likely words in the list,

based on a context of the current word (column 17, lines 39-41);

respectively combining the language model scores of each of the most

likely words in the list to obtain a composite score for each of the most likely

words in the list, using the set of coefficients determined therefor (column 16,

lines 8-11);

wherein said determining step comprises the steps of:

dividing text data (column 1, lines 8-13) for training (column 15, lines 7-13)

a plurality of sets of coefficients into partitions (frames; column 1, lines 8-13),

depending on words counts (identifying words/scores) corresponding to each of

the at least two language model (utterance/language models; column 15, lines

60-67 with column 16, lines 20-25); and

for each of the most likely words in the list, dynamically selecting (figure

4A, element 405) the set of coefficients from among the plurality of sets of

coefficients so as to maximize the likelihood (likelihood of the match; column 4,

lines 1-20) of the text data with respect to the at least two language models

(column 4, lines 46-67).

Regarding **claims 3, 13 and 22**, Gillick discloses the method wherein the at least two language models comprises a first and second language model, and said dividing step comprises the step of grouping, in a same partition, word triplets sub.1w.sub.2w.sub.3 (trigram models) which have a count for the word pair w.sub.1w.sub.2 (bigram models; column 1, line 63 – column 2, line 5 and pair of words; column 14, lines 17-32) in first language model (first, second and/or third language models) greater than the count for the word pair w.sub.1w.sub.2 in the second language model (fourth language model; column 18, lines 16-28).

Regarding **claims 5 and 15**, Gillick discloses the method further comprising the step of, for each of the most likely words in the list, combining an acoustic score (acoustic score) and the composite score (previous score) to identify a group of most likely words to be further processed (column 10, lines 8-14).

Regarding **claims 6, 16 and 23**, Gillick discloses the method wherein the group of most likely words contains less words than the list of most likely words (added to the list of words; column 7, lines 60 – column 8, lines 32).

Regarding **claim 7**, Gillick discloses the method wherein the partitions are independent from the at least two language models (column 2, lines 1-5).

Regarding **claim 8**, Gillick discloses the method further comprising the step of representing the set of coefficients by a weight vector comprising n-weights (interpolation weights), where n (lambda 1 and 2) equals a number of

language models in the system (column 16, lines 1-25), to identify the best

corresponds to a user's utterance.

Regarding **claims 9, 17 and 24**, Gillick discloses the method wherein said

combining step comprises the steps of:

for each of the most likely words in the list (column 1, lines 43-47),

multiplying a coefficient corresponding to a language model by a language

model score corresponding to the language model to obtain a product for each

of the at least two language models (column 10, lines 16-18); and

summing the product for each of the at least two language models

(column 10, lines 8-67), in order to determine the acoustic models that best

matches the utterance.

Regarding **claims 10 and 18**, Gillick discloses the method wherein the

text data for training the plurality of sets of coefficients is different than language

model text data used to train the at least two language models (column 16, lines

26-29).

Regarding **claim 11**, Gillick discloses a method for combining language

model scores (column 16, lines 8-11) generated by at least two language models

(variety of language models; column 2, lines 1-5) comprised in an Automatic

Speech Recognition (ASR) system (figure 1, element 160; column 1, lines 6-7),

said method comprising the steps of:

generating a list (figure 11, element 1125) of most likely words for a

current word in a word sequence uttered by a speaker (column 1, lines 33-42),

and acoustic scores corresponding to the most likely words (figure 9);

computing language model scores for each of the most likely words in the

list (column 18, lines 36-39), for each of the at least two language models;

respectively and dynamically determining a weight vector to be used to

combine the language model scores of each of the most likely words in the list

based on the context of the current word (column 17, lines 39-41), the weight

vector comprising n-weights (interpolation weights), wherein n (lambda 1 and 2)

equals a number of language models in the system (column 16, lines 1-25), and

each of the n-weights depend upon n-gram history counts (frequency of words;

column 14, lines 26-32); and

respectively combining the language model scores of each of the most

likely words in the list to obtain a composite score for each of the most likely

words in the list, using the set of coefficients determined therefor (column 16,

lines 8-11).

Regarding **claim 19**, Gillick discloses a combining system for combining

language model scores (column 16, lines 8-11) generated by at least two

language models (variety of language models; column 2, lines 1-5) comprised in

an Automatic Speech Recognition (ASR) system (figure 1, element 160; column

1, lines 6-7), the ASR system having a fast match (processor) for generating a

list (figure 11, element 1125) of most likely words for a current word in a word

sequence uttered by a speaker and acoustic scores corresponding to the most

likely words (column 1, lines 33-42) combing system comprising:

a language model score computation device (hardware or software) adapted to compute language model scores for each of the most likely words in the list (column 18, lines 36-39), for each of the at least two language models;

a selection device (recognizer; figure 13, element 215) adapted to respectively and dynamically select a weight vector to be used to combine the language model scores of each of the most likely words in the list based on the context of the current word (column 17, lines 39-41), the weight vector comprising n-weights (interpolation weights), wherein n (lambda 1 and 2) equals a number of language models in the system (column 16, lines 1-25), and each of the n-weights depend upon n-gram history counts (frequency of words; column 14, lines 26-32); and

a combination device (select command; column 4, lines 46-50) adapted to respectively combining the language model scores of each of the most likely words in the list to obtain a composite score for each of the most likely words in the list, using the set of coefficients determined therefor (column 16, lines 8-11).

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7.   **Claims 4 and 14** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Gillick in view of Goldenthal (U.S. Patent No. 6,625,749),

hereinafter referenced as Goldenthal.

Regarding **claims 4 and 14**, Gillick discloses speech recognition language

models, but lacks disclosing the method wherein said selecting step comprises

the step of applying the Baum Welch iterative algorithm to the plurality of sets of

coefficients.

Goldenthal discloses the method wherein said selecting step comprises

the step of applying the Baum Welch iterative algorithm to the plurality of sets of

coefficients (column 2, lines 41-43), for training Hidden Markov Models (HMM's).

Therefore, it would have been obvious to one of ordinary skill in the art at

the time the invention was made to modify Gillick's invention such that it applied

the Baum Welch iterative algorithm, in order to handle speech problems (column

2, lines 31-32).

Conclusion

8.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of

time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire

THREE MONTHS from the mailing date of this action. In the event a first reply is

filed within TWO MONTHS of the mailing date of this final action and the advisory

action is not mailed until after the end of the THREE-MONTH shortened statutory

period, then the shortened statutory period will expire on the date the advisory

action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

calculated from the mailing date of the advisory action. In no event, however, will

the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

9.   Any inquiry concerning this communication or earlier communications from

the examiner should be directed to Jakieda R Jackson whose telephone number

is 703.305.5593. The examiner can normally be reached on Monday through

Friday from 7:30 a.m. to 5:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, Doris To can be reached on 703. 305.4827. The fax

phone number for the organization where this application or proceeding is

assigned is 703-872-9306.

Information regarding the status of an application may be obtained from

the Patent Application Information Retrieval (PAIR) system. Status information

for published applications may be obtained from either Private PAIR or Public

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direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-

free).

JRJ

June 3, 2004

SUSAN MCFADDEN
PRIMARY EXAMINER